



National Space Science Data Center/
World Data Center A For Rockets and Satellites

83-19

Documentation for the Machine-Readable Version
of the
CATALOGUE OF 20457 STAR POSITIONS OBTAINED BY PHOTOGRAPHY IN THE
DECLINATION ZONE -48° TO -54° (1950)
(EICHHORN, GOOGE, LUKAC AND MURPHY 1983)



December 1983

DOCUMENTATION FOR THE MACHINE-READABLE VERSION
OF THE
CATALOGUE OF 20457 STAR POSITIONS OBTAINED BY PHOTOGRAPHY IN THE
DECLINATION ZONE -48° TO -54° (1950)
(EICHHORN, GOOGE, LUKAC AND MURPHY 1983)

Wayne H. Warren Jr.

December 1983

National Space Science Data Center (NSSDC)/
World Data Center A for Rockets and Satellites (WDC-A-R&S)
National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

DOCUMENTATION FOR THE MACHINE-READABLE VERSION
OF THE
CATALOGUE OF 20457 STAR POSITIONS OBTAINED BY PHOTOGRAPHY IN THE
DECLINATION ZONE -48° TO -54° (1950)
(EICHHORN, GOOGE, LUKAC AND MURPHY 1983)

ABSTRACT

A detailed description of the machine-readable catalog, as it is currently being distributed from the Astronomical Data Center, is given. Some minor reformatting of the magnetic tape version received from the first author was done in order to decrease the record size and conserve space; the data content is identical to the sample shown in Table VI of the source reference (Eichhorn et al. 1983, *Astron. J.* 88, 546).

TABLE OF CONTENTS

Section 1 - INTRODUCTION AND SOURCE REFERENCE	1-1
Section 2 - TAPE CONTENTS	2-1
Section 3 - TAPE CHARACTERISTICS	3-1
Section 4 - REMARKS, MODIFICATIONS, ACKNOWLEDGMENT AND REFERENCES	4-1
Section 5 - SAMPLE LISTING	5-1

LIST OF TABLES

Table

1 Tape Contents	2-1
2 Tape Characteristics	3-1

SECTION 1 - INTRODUCTION AND SOURCE REFERENCE

The *Catalogue of 20457 Star Positions Obtained by Photography in the Declination Zone -48° to -54° (1950)* (Eichhorn et al. 1983), hereinafter referred to as the "Sydney Photographic Catalogue -48° to -54°" or "SPC", gives position estimates determined by the plate overlap method (cf. Eichhorn 1960) from plates taken at the Sydney Observatory in 1964. The catalog was originally planned to fill part of the gap left by the Yale Zone and Cape Photographic Catalogues, although the gap has in the meantime been closed by catalogs prepared at Sydney Observatory (see Nicholson 1979; King and Lomb 1983).

This document describes the machine-readable version of the catalog as it is currently being distributed from the Astronomical Data Center. It is intended to enable users to read and process the data without problems or guesswork. Additional details concerning the plate material and measurement, reference positions, reductions, elimination of magnitude-dependent aberrations, determination of final positions, and comparison with the FK4 system can be found in the source reference. A copy of this document should be distributed with any secondary copy of the machine-readable catalog originating from the Astronomical Data Center.

SOURCE REFERENCE

Eichhorn, H., Googe, W. D., Lukac, C. F. and Murphy, J. K. 1983, *Astron. J.* **88**, 546.

SECTION 2 - TAPE CONTENTS

A byte-by-byte description of the contents of the SPC is given in Table 1. The suggested format specifications apply to FORTRAN formatted read statements and can be modified depending upon individual programming and processing requirements. Default (null) values are always blanks for data fields read with a character (A) format. If no default value is given for a numerical field, that field has been found to always contain valid data. Alternate format specifications are given in parentheses.

Table 1. Tape Contents. *Sydney Photographic Catalogue -48° to -54°.*

Byte(s)	Units	Suggested Format	Default Value	Description
1- 9	---	A9 (9A1)	---	Number in the <i>Cape Photographic Durchmusterung</i> (Gill and Kapteyn 1897, 1900). The zone sign (always -) is in byte 1, the zone in bytes 2-3, byte 4 is blank, and the number is in bytes 5-9. The identifications are not complete, i.e. existing CPD numbers are not always present.
10	---	1X	---	Blank
11-13	---	A3	---	Source catalog identification, as follows: <div style="margin-left: 40px;"> A Gill and Hough (1923) B Jackson and Stoy (1955) 1-120 Plates in Cape AC zone -49° 121-240 Plates in Cape AC zone -51° (Cape 1913-1926) 241-360 Plates in Sydney AC zone -53° (Sydney Obs. 1923-1933; see Wood 1971) </div> where each AC zone is covered by 120 plates and 120 or 240 is subtracted to obtain plate numbers in the -51° and -53° zones, respectively.
14	---	1X	---	Blank
15-19	---	I5	---	Star or plate number in the source catalog indicated in bytes 11-13.
20	---	A1	---	An asterisk (*) if the star served as a reference star.
21	---	1X	---	Blank

Table 1. (Continued)

Byte(s)	Units	Suggested Format	Default Value	Description
22-23	hours	I2	---	Right ascension (α) for the mean coordinate system 1950, ostensibly on the system of the FK4, at the average epoch 1964.475 of all plates which provided data. (If higher accuracy epochs are required, Table I of Eichhorn et al. 1983 should be consulted.)
24	---	1X	---	Blank
25-26	min	I2	---	α
27	---	1X	---	Blank
28-32	sec	F5.2	---	α
33	---	1X	---	Blank
34	---	A1	---	Sign of declination (δ) for the mean coordinate system 1950 (see description for bytes 22-23).
35-36	°	I2	---	δ
37	---	1X	---	Blank
38-39	'	I2	---	δ
40	---	1X	---	Blank
41-44	"	F4.1	---	δ
45	---	1X	---	Blank
46-49	mag	F4.1	blank	Photovisual magnitude, taken from existing sources. (For AC stars, the magnitudes were computed from data given in the AC and are photographic.) Magnitudes are neither precise nor accurate and are given for reference purposes only.
50	---	1X	---	Blank
51	---	I1	---	Number of measured central images contributing to the calculation of the published position.

Table 1. (Concluded)

Byte(s)	Units	Suggested Format	Default Value	Description
52	---	1X	---	Blank
53	---	I1	blank	Number of pairs of diffraction spectra contributing to the calculation of the published position. The number of individual images measured for computing a published position is the number in byte 51 plus twice the number in byte 53 (see Eichhorn et al. 1983).

SECTION 3 - TAPE CHARACTERISTICS

The information contained in Table 2 is sufficient for a user to describe the indigenous characteristics of the machine-readable *Sydney Photographic Catalogue* to a computer. Information easily varied from installation to installation, such as block size (physical record length), blocking factor (number of logical records per physical record), total number of blocks, tape density, and internal coding (EBCDIC, ASCII, etc.) is not included. This information should always be supplied if secondary copies are transmitted to other users or installations.

Table 2. Tape Characteristics. *Sydney Photographic Catalogue -48° to -54°.*

NUMBER OF FILES	1
LOGICAL RECORD LENGTH (BYTES)	53
RECORD FORMAT	FB*
TOTAL NUMBER OF LOGICAL RECORDS	20457

* Fixed block length (last block may be short)

SECTION 4 - REMARKS, MODIFICATIONS, ACKNOWLEDGMENT AND REFERENCES

The machine-readable version of the SPC was received on magnetic tape from H. Eichhorn in February 1982. As received, the file consisted of 104-byte records with bytes 1-25 blank and many other blanks throughout the records. The records on this tape had been designed specifically for printing the catalog and microfiching rather than for efficient storage and computing. To increase storage efficiency the following modifications were made after checking with the first author to be certain that the changes would be acceptable.

1. Superfluous blanks were removed from throughout the data records, except for a single separator blank between each of the data fields; thus the logical record length was decreased from 104 to 53 bytes.
2. Preceding zeros were added to all right ascension and declination fields.

ACKNOWLEDGMENT

Appreciation is expressed to Dr. H. Eichhorn for providing the SPC on tape and for reviewing and commenting on a draft copy of this document.

REFERENCES

- Cape of Good Hope 1913-1926, *Cape Astrographic Zones, Catalogue of Rectangular Coordinates and Diameters of Star Images, Zones -41° to -51°* (Royal Observatory, Cape of Good Hope), Vols. 9 (-49°) and 11 (-51°).
- Eichhorn, H. 1960, *Astron. Nachr.* 285, 233.
- Eichhorn, H., Googe, W. D., Lukac, C. F. and Murphy, J. K. 1983, *Astron. J.* 88, 546.
- Gill, D. and Hough, S. S. 1923, *Zone Catalogue of 20,843 Stars, Equinox 1900...* Royal Obs., Cape of Good Hope (London: H. M. Stationery Office).
- Gill, D. and Kapteyn, J. C. 1897, *Cape Photographic Durchmusterung, Zones -39° to -52°*, *Ann. Cape Observatory* 4, Part II.
- Gill, D. and Kapteyn, J. C. 1900, *Cape Photographic Durchmusterung, Zones -53° to -59°*, *Ann. Cape Observatory* 5, Part III.
- Jackson, J. and Stoy, R. H. 1955, *Cape Photographic Catalogue for 1950.0. Zone -52° to -56°* (London: H. M. Stationery Office).
- King, D. S. and Lomb, N. R. 1983, *Sydney Southern Star Catalogue*, preprint.
- Nicholson, W. 1979, in *IAU Colloquium 48, Modern Astrometry*, edited by F. V. Prochazka and R. H. Tucker (Vienna: University Observatory), p. 515.

Sydney Observatory 1923-1933, *Astrographic Catalogue 1900.0, Sydney Section*,
Dec. -51° to -65° , Vols. I-XII, DEC -51° to -55° , Plate Centres DEC. -52° ,
 -54° (Sydney: Alfred James Kent, Government Printer).

Wood, H. 1971, *Astrographic Catalogue 1900.0, Sydney Section: Dec. -51° to -65°*
Vol. LIII Explanation (Sydney: Sydney Observatory).

SECTION 5 - SAMPLE LISTING

The sample listing given on the following pages contains logical data records exactly as they are recorded on the tape. Groups of records from the beginning and end of each file of the catalog are illustrated. The beginning of each record and bytes within the record are indicated by the column heading index across the top of each page (digits read vertically).



NASA

National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland 20771